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THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR OFFERING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'PH1W2'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this fourteenth day of June, in the year of our Lord two thousand one.

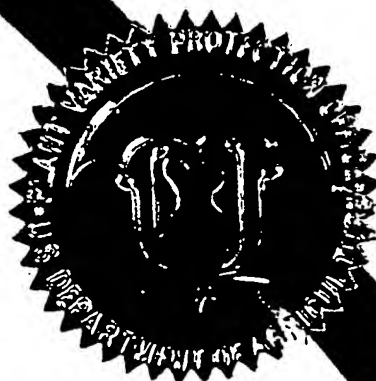
Attest:

Alvin K. Post

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service


Charles C. Carson

Secretary of Agriculture



REPRODUCE LOCALLY Include form number and date on all reproductions.

FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE		The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995. Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2428).	
APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE (Instructions and information collection burden statement on reverse)			
1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Pioneer Hi-Bred International, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME PH1W2
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Research and Product Development P.O. Box 85 Johnston, IA 50131-0085		5. TELEPHONE (include area code) 515/270-4051	FOR OFFICIAL USE ONLY PVPO NUMBER 9000022
		6. FAX (include area code) 515/253-2125	
7. GENUS AND SPECIES NAME Zea Mays	8. FAMILY NAME (Botanical) Gramineae		9. DATE 10/27/1998
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) Corporation			11. FILING AND EXAMINATION FEE \$ 2450.00
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa			12. DATE OF INCORPORATION May 6, 1926
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Steven R. Anderson Research and Product Development P.O. Box 85 Johnston, IA 50131-0085			14. TELEPHONE (including area code) 515/270-4051
			15. FAX (include area code) 515/253-2125
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable unselected seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 63(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) November 1, 1997; United States, Canada <input type="checkbox"/> NO			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is/are the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is/are informed that false representation herein can jeopardize protection and results in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) 		SIGNATURE OF APPLICANT (Owner(s)) Steven R. Anderson	
NAME (Please print or type) Steven R. Anderson		NAME (Please print or type) Steven R. Anderson	
CAPACITY OR TITLE Senior Research Associate	DATE 10-14-98	CAPACITY OR TITLE Senior Research Associate	DATE 10-14-98

370-470 (03-94) (Previous editions are to be destroyed)

(See reverse for instructions and information collection burden statement)

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INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety protection Office (PVPO), ALL of the following items must be received ⁹⁻²⁻⁸² in the PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits A,B,C,E; (3) at least 2,500 viable untreated seeds, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in a approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filing fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety production Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Blvd., Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$300 for issuance of the Certificate.

Plant Variety Protection Office
Telephone: (301) 504-5518

ITEM

- 16a. Give:
 - (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 - (2) the details of subsequent stages of selection and multiplication;
 - (3) evidence of uniformity and stability; and
 - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified.
- 16b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
 - (1) identify these varieties and state all differences objectively;
 - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences;
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 16c. Exhibit C forms are available from the PVPO for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 16d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 16e. Section 52(5) of the Act required applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
17. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant may NOT reverse this affirmative decision after the variety has been sold and so labelled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
20. See sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705.
Telephone: (301) 504-8089.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7830, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB No. 0581-0053 and form number in your letter. Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

The U.S. Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and mental or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication program information (braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-1791. To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C. 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

Exhibit A. Origin and Breeding History

Pedigree: PHBM0/PHBW8)X71W14W3X

Pioneer Line PH1W2, Zea mays L., a dent corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross PHBM0 X PHBW8 (PVP Certificate Number 9200079) using the pedigree method of breeding. The progenitors of PH1W2 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Variety PHBM0 was derived by pedigree selection from the F2 population of the single cross PHN37 (PVP Certificate Number 8900315) X PHV75. Variety PHV75 was derived by pedigree selection from the F2 population of the single cross PHG80 (PVP Certificate Number 8400128) X PHG39 (PVP Certificate Number 8300115). Selfing and selection were practiced within the above F1 cross for 7 generations in the development of PH1W2 at Janesville, Wisconsin. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Janesville, Wisconsin as well as other Pioneer research locations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

PH1W2 has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed a 6 generations with careful attention paid to uniformity of plant type to assure genetic homozygosity and phenotypic stability. Since then, the line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PH1W2.

The criteria used in the selection of PH1W2 were yield, both per se and in hybrid combinations; kernel size, especially important in production; ability to germinate in adverse conditions; number of tillers, especially important in production because having numerous tillers increases hybrid production costs spent on detasseling; disease and insect resistance; pollen yield; and tassel size

845
7/1/51
Please add this statement to Exhibit A: The line PH1W2 has been increased both by hand and in isolated fields with continued observations for uniformity and stability throughout development, and for 3 generations during the final stages of inbred development and seed multiplication.

Exhibit A

9000042

DEVELOPMENTAL HISTORY FOR PH1W2

<u>Season/Year</u>	<u>Inbreeding Level</u>
Summer 1990	F0
Winter 1991	F1
Summer 1992	F2
Summer 1993	F3
Winter 1993	F4
Summer 1994	F5
Winter 1994	F6
Summer 1995	F7

*PH1W2 was selfed and selected through F7 generation.

**PH1W2 was selfed and ear-rowed from F2 through F7 generation.

Exhibit B. Novelty Statement

9000022

Variety PH1W2 mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PHJ40 (PVP Certificate No. 8600133). The data in Table 1A and 1B are from paired comparisons collected primarily from two environments in Johnston, IA. The data in Table 2 are from paired comparisons at multiple locations grown primarily in the adapted growing area of PH0V0. The traits in Table 1A, 1B, and Table 2 collectively show measurable differences between the two varieties.

Variety PH1W2 has longer husk extension length (5.4 cm vs 1.7 cm) than PHJ40. (Table 1A, 1B).

Variety PH1W2 has longer husk length (22.1 cm vs 18.3 cm) than PHJ40 (Table 1A, 1B)..

Variety PH1W2 has longer tassel length (51.7 cm vs 48.5 cm) than PHJ40 (Table 1A, 1B).

Variety PH1W2 has longer tassel peduncle length (18.0 cm vs 12.9 cm) than PHJ40 (Table 1A, 1B).

Variety PH1W2 has greater yield (GQU/HA) (48.0 grain quintals per hectare vs 37.1 grain quintals per hectare) than PHJ40 (Table 2).

Variety PH1W2 reaches 50% pollen shed (GDUSHD) later (1335 GDU's vs 1205 GDU's) than PHJ40 (Table 2).

Variety PH1W2 reaches 50% silking (GDUSLK) later (1335 GDU's vs 1219 GDU's) than PHJ40 (Table 2).

Variety PH1W2 has taller plant height (PLTHT) (202.4 cm vs 174.8 cm) than PHJ40 (Table 2).

Variety PH1W2 has less kernels per kilogram (KER/KG) (3021 vs 3743) than PHJ40 (Table 2).

Exhibit B Novelty Statement Tables

Table 1A. Data from Johnston, IA at 2 different locations in 1997 are supporting evidence for differences between PH1W2 and PHJ40. Locations had different environmental conditions. One environment was irrigated and 1 was not. Environments had different planting dates and were in different fields. The statistical test used was a t-test broken out by environment in 1997.

station	loc	year	trait	variety 1	variety 2	count 1	count 2	mean 1	mean 2	mean diff	std dev 1	std dev 2	std dev diff	std error	df	t-value	prob (2-tail)
AD	20N	1997	husk extension length (cm)	PH1W2	PHJ40	5	5	4.8	2.0	2.8	0.837	0.000	0.374	0.000	8	7.48	0.000
JH	21	1997	husk extension length (cm)	PH1W2	PHJ40	5	5	6.0	1.4	4.6	0.707	0.548	0.318	0.245	8	11.50	0.000
AD	20N	1997	husk length (cm)	PH1W2	PHJ40	5	5	22.0	18.4	3.6	1.000	1.140	0.447	0.510	8	5.31	0.001
JH	21	1997	husk length (cm)	PH1W2	PHJ40	5	5	22.2	18.2	4.0	1.304	0.447	0.583	0.200	8	6.49	0.000
AD	20N	1997	tassel length (cm)	PH1W2	PHJ40	5	5	52.4	49.6	2.8	2.074	1.873	0.927	0.748	8	2.35	0.047
JH	21	1997	tassel length (cm)	PH1W2	PHJ40	5	5	51.0	47.4	3.6	1.732	1.673	0.775	0.748	8	3.34	0.010
AD	20N	1997	tassel peduncle length (cm)	PH1W2	PHJ40	5	5	19.0	12.8	6.2	2.345	0.447	1.049	0.200	8	5.81	0.000
JH	21	1997	tassel peduncle length (cm)	PH1W2	PHJ40	5	5	17.0	13.0	4.0	1.225	1.000	0.548	0.447	8	5.66	0.000

Table 1B Summary data from Johnston, IA across 2 different locations in 1997 are supporting evidence for differences between PH1W2 and PHJ40. Locations had different environmental conditions. One environment was irrigated and 1 was not. Environments had different planting dates and were in different fields. The statistical test used was a t-test pooled across environments in 1997.

year	Trait	variety-1	variety-2	Count-1	Count-2	Mean-1	Mean-2	Mean-Diff	StdDev-1	StdDev-2	StdDev-Diff	StdErr-1	StdErr-2	StdErr-Diff	DF-Pooled	t-Value-Pooled	Prob (2-tail)
1997	husk extension length (cm)	PH1W2	PHJ40	10	10	5.4	1.7	3.7	0.966	0.483	0.308	0.153	0.153	0.153	18	10.83	0.000
1997	husk length (cm)	PH1W2	PHJ40	10	10	22.1	18.3	3.8	1.101	0.823	0.348	0.260	0.260	0.260	18	8.74	0.000
1997	tassel length (cm)	PH1W2	PHJ40	10	10	51.7	48.5	3.2	1.947	1.958	0.618	0.618	0.618	0.618	18	3.87	0.002
1997	tassel peduncle length (cm)	PH1W2	PHJ40	10	10	18.0	12.9	5.1	2.055	0.738	0.650	0.233	0.233	0.233	18	7.39	0.000

Exhibit B Novelty Statement Tables

9000022

Table 2. These data indicate differences between varieties PH1W2 and PHJ40. Data are from multiple locations and years grown primarily in the adapted growing area.

Variety 1 = PH1W2

Variety 2 = PHJ40

		BU	GQU	GDU	GDU	PLT	KER
	VAR	ACR	/HA	SHD	SLK	HT	/KG
YEAR	#	%MN	ABS	ABS	ABS	ABS	ABS
						(cm)	
95	1	124.0	52.8	1323.0	1300.0	191.0	3051.0
	2	102.0	44.0	1197.0	1199.0	159.5	3771.5
	LOCS	12	12	10	8	10	7
	REPS	15	15	10	8	10	7
	PROB	.001#	.000#	.000#	.003#	.000#	.000#
96	1	119.0	45.9	1352.0	1354.0	201.9	2969.2
	2	88.0	34.7	1208.0	1231.0	181.1	3692.7
	LOCS	16	16	30	29	11	4
	REPS	16	16	30	29	11	4
	PROB	.000#	.000#	.000#	.000#	.000#	.004#
97	1	113.0	41.8	1320.0	1324.0	211.1	
	2	70.0	26.0	1204.0	1212.0	180.3	
	LOCS	4	4	27	27	14	
	REPS	4	4	27	27	14	
	PROB	.001#	.014+	.000#	.000#	.000#	
TOTAL SUM	1	120.0	48.0	1335.0	1335.0	202.4	3021.2
	2	91.0	37.1	1205.0	1219.0	174.8	3742.9
	LOCS	32	32	67	64	35	11
	REPS	35	35	67	64	35	11
	DIFF	29.0	10.9	130.0	116.0	27.9	721.7
	PROB	.000#	.000#	.000#	.000#	.000#	.000#

United States Department of Agriculture, Agricultural Marketing Service
Science Division, Plant Variety Protection Office
National Agricultural Library Building, Room 500
Beltsville, MD 20705

500002

Objective Description of Variety
Corn (Zea mays L.)

Name of Applicant (s) Pioneer Hi-Bred International, Inc.		Variety Seed Source	Variety Name or Temporary Designation PH1W2	
Address (Street & No., or RFD No., City, State, Zip Code and Country) 7301 NW 62nd Avenue, P.O. Box 85, Johnston, Iowa 50131-0085			FOR OFFICIAL USE	
			PVP Number	
Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by an '*' are considered necessary for an adequate variety description and must be completed.				
COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices: describe #25 and #26 in Comments section):				
01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple	21=Buff
02=Medium Green	07=Yellow	12=Light Red	17=Purple	22=Tan
03=Dark Green	08=Yellow Orange	13=Cherry Red	18=Colorless	23=Brown
04=Very Dark Green	09=Salmon	14=Red	19=White	24=Bronze
05=Green-Yellow	10=Pink-Orange	15=Red & White	20=White Capped	25=Variegated (Describe)
				26=Other (Describe)
STANDARD INBRED CHOICES				
(Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):				
Yellow Dent Families:		Yellow Dent (Unrelated):	Sweet Corn:	
Family	Members	Co109, ND246,	C13, Iowa5125, P39, 2132	
B14	CM105, A632, B64, B68	Oh7, T232,		
B37	B37, B76, H84	W117, W153R,	Popcorn:	
B73	N192, A679, B73, NC268	W18BN	SG1533, 4722, HP301, HP7211	
C103	Mo17, Va102, Va35, A682			
Oh43	A619, MS71, H99, Va26	White Dent:	Pipcorn:	
WF9	W64A, A554, A654, Pa91	C166, H105, Ky228	Mo15W, Mo16W, Mo24W	

Corn world/duffy/44pp

EXHIBIT C: PH1W2

1. TYPE: (describe intermediate types in Comments section):

2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental

2. REGION WHERE DEVELOPED IN THE U.S.A.:

2 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral

6=Southwest 7=Other

3. MATURITY (In Region of Best Adaptability; show Heat Unit formula in 'Comments' section)

DAYS HEAT UNITS

071 1,274.5 From emergence to 50% of plants in silk
 072 1,290.3 From emergence to 50% of plants in pollen
 004 0,096.5 From 10% to 90% pollen shed
 From 50% silk to optimum edible quality
 066 1,248.0 From 50% silk to harvest at 25% moisture

4. PLANT:

	Standard Deviation	Sample Size		Standard Deviation	Sample Size
203.3 cm Plant Height (to tassel tip)	11.59	04	149.8	14.38	04
084.3 cm Ear Height (to base of top ear node)	10.72	04	047.3	06.18	04
014.4 cm Length of Top Ear Internode	02.02	04	010.8	02.12	04
0.0 Average Number of Tillers/plant	00.00	04	0.0	00.04	04
1.8 Average Number of Ears per Stalk	00.50	04	1.0	00.00	04
3 Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark			2		

5. LEAF:

	Standard Deviation	Sample Size		Standard Deviation	Sample Size
07.9 cm Width of Ear Node Leaf	00.68	04	07.6	00.62	04
79.8 cm Length of Ear Node Leaf	06.06	04	67.7	04.27	04
05 Number of leaves above top ear	00.87	04	06	00.57	04
48 Degrees Leaf Angle (measure from 2nd leaf above ear at anthesis to stalk above leaf)	10.68	04	41	12.97	04
03 Leaf Color (Munsell code) 5GY 3/4			03	5GY 3/4	
1 Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			1		
5 Marginal Waves (Rate on scale from 1=none to 9=many)			7		
5 Longitudinal Creases (Rate on scale from 1=none to 9=many)			5		

6. TASSEL:

	Standard Deviation	Sample Size		Standard Deviation	Sample Size
08 Number of Primary Lateral Branches	03.05	04	06	02.26	04
26 Branch Angle from Central Spike	17.46	04	34	07.54	04
52.3 cm Tassel Length (from top leaf collar to tassel tip)	02.14	04	45.7	05.57	04
6 Pollen Shed (rate on scale from 0=male sterile to 9=heavy shed)			7		
07 Anther Color (Munsell code) 10Y 9/6			14	2.5R 4/6	
01 Glume Color (Munsell code) 5GY 6/6			01	5GY 5/8	
1 Bar Glumes (Glume Bands): 1=Absent 2=Present			2		

Application Variety Data

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7a. EAR (Unhusked Data):

- 14 Silk Color (3 days after emergence) (Munsell code) 5R 4/6
 02 Fresh Husk Color (25 days after 50% silking) (Munsell code) 5GY 4/6
 21 Dry Husk Color (65 days after 50% silking) (Munsell code) 10YR 8/4
 1 Position of Ear at Dry Husk Stage: 1= Upright 2= Horizontal 3= Pendant
 5 Husk Tightness (Rate of Scale from 1=very loose to 9=very tight)
 2 Husk Extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm)
 3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm)

07 2.5GY 9/6
 01 5GY 7/8
 21 2.5Y 8/4
 2
 7
 2

7b. EAR (Husked Ear Data):

	Standard Deviation Size	Sample Size
14.3 cm Ear Length	00.96	04
40.3 mm Ear Diameter at mid-point	09.96	04
115.5 gm Ear Weight	07.72	04
12 Number of Kernel Rows	00.50	04
2 Kernel Rows: 1=Indistinct 2=Distinct		
1 Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral		
12.3 cm Shank Length	03.10	04
2 Ear Taper: 1=Slight 2= Average 3=Extreme		

	Sample Deviation	Standard
12.5	02.38	04
36.3	01.29	04
68.3	15.44	04
11.5	00.58	04
2		
1		
09.3	00.96	04
2		

8. KERNEL (Dried)

	Standard Deviation	Sample Size
10.8 mm Kernel Length	00.50	04
09.0 mm Kernel Width	00.00	04
05.5 mm Kernel Thickness	01.00	04
33.0 % Round Kernels (Shape Grade)	02.94	04
1 Aleurone Color Pattern: 1-Homozygous 2=Segregating		
07 Aleurone Color (Munsell code)	10YR 7/12	
07 Hard Endosperm Color (Munsell code)	10YR 7/14	
03 Endosperm Type:		
1=Sweet (Su1) 2=Extra Sweet (sh2) 3=Normal Starch		
4=High Amylose Starch 5=Waxy Starch 6=High Protein		
7=High Lysine 8=Super Sweet (sc) 9=High Oil		
10=Other _____		
38.0 gm Weight per 100 Kernels (unsized sample)	00.82	04

	Standard Deviation	Sample Size
09.0	00.00	04
08.5	00.58	04
04.8	00.50	04
30.3	18.17	04
1		
07	10YR 8/14	
07	2.5Y 8/12	
3		

9. COB:

	Standard Deviation	Sample Size
21.8 mm Cob Diameter at mid-point	00.50	04
14 Cob Color (Munsell code)	10R 4/6	

	Standard Deviation	Sample Size
22.5	01.73	04
19	2.5Y 9/2	

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10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant);
leave blank if not tested; leave Race or Strain Options blank if polygenic):

A. Leaf Blights, Wilts, and Local Infection Diseases

	Anthrachnose Leaf Blight (<i>Colletotrichum graminicola</i>)	
	Common Rust (<i>Puccinia sorghi</i>)	
	Common Smut (<i>Ustilago maydis</i>)	
8	Eyespot (<i>Kabatella zeae</i>)	8
8	Goss's Wilt (<i>Clavibacter michiganense</i> spp. <i>nebraskense</i>)	8
2	Gray Leaf Spot (<i>Cercospora zeae-maydis</i>)	2
	Helminthosporium Leaf Spot (<i>Bipolaris zeicola</i>) Race —	
7	Northern Leaf Blight (<i>Exserohilum turcicum</i>) Race —	8
	Southern Leaf Blight (<i>Bipolaris maydis</i>) Race —	
	Southern Rust (<i>Puccinia polysora</i>)	
	Stewart's Wilt (<i>Erwinia stewartii</i>)	
	Other (Specify) —	

B. Systemic Diseases

	Corn Lethal Necrosis (MCMV and MDMV)	
9	Head Smut (<i>Sphacelotheca reiliana</i>)	8
	Maize Chlorotic Dwarf Virus (MDV)	
	Maize Chlorotic Mottle Virus (MCMV)	
	Maize Dwarf Mosaic Virus (MDMV)	
	Sorghum Downy Mildew of Corn (<i>Peronosclerospora sorghi</i>)	
	Other (Specify) —	

C. Stalk Rots

Anthrachnose Stalk Rot (*Colletotrichum graminicola*)
 Diplodia Stalk Rot (*Stenocarpella maydis*)
 Fusarium Stalk Rot (*Fusarium moniliforme*)
 Gibberella Stalk Rot (*Gibberella zeae*)
 Other (Specify) —

D. Ear and Kernel Rots

	Aspergillus Ear and Kernel Rot (<i>Aspergillus flavus</i>)	
	Diplodia Ear Rot (<i>Stenocarpella maydis</i>)	
	Fusarium Ear and Kernel Rot (<i>Fusarium moniliforme</i>)	
7	Gibberella Ear Rot (<i>Gibberella zeae</i>)	8
	Other (Specify) —	

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11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); (leave blank if not tested) :

Banks grass Mite (*Oligonychus pratensis*)
 Corn Worm (*Helicoverpa zea*)
 Leaf Feeding
 Silk Feeding
 mg larval wt.
 Ear Damage
 Corn Leaf Aphid (*Rhopalosiphum maidis*)
 Corn Sap Beetle (*Carpophilus dimidiatus*)
 European Corn Borer (*Ostrinia nubilalis*)
 1st Generation (Typically Whorl Leaf Feeding)
 2nd Generation (Typically Leaf Sheath-Collar Feeding)
 Stalk Tunneling
 cm tunneled/plant
 Fall Armyworm (*Spodoptera frugiperda*)
 Leaf Feeding
 Silk Feeding
 mg larval wt.
 Maize Weevil (*Sitophilus zeamais*)
 Northern Rootworm (*Diabrotica barberi*)
 Southern Rootworm (*Diabrotica undecimpunctata*)
 Southwestern Corn Borer (*Diatraea grandiosella*)
 Leaf Feeding
 Stalk Tunneling
 cm tunneled/plant
 Two-spotted Spider Mite (*Tetranychus urticae*)
 Western Rootworm (*Diabrotica virginea virgifera*)
 Other (Specify) _____

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12. AGRONOMIC TRAITS:

8	Staygreen (at 65 days after anthesis) (Rate on a scale from 1=worst to excellent)	2
0.0	% Dropped Ears (at 65 days after anthesis)	0.0
	% Pre-anthesis Brittle Snapping	
	% Pre-anthesis Root Lodging	
8.5	Post-anthesis Root Lodging (at 65 days after anthesis)	0.0
4,043.8	Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)	1,800.0

13. MOLECULAR MARKERS: (0=data unavailable; 1=data available but not supplied; 2=data supplied):

1	Isozymes	0	RFLP's	0	RAPD's
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COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D):

Application Variety Data

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CLARIFICATION OF DATA IN EXHIBITS B, C AND D.

Please note the data presented in Exhibit C, "Objective Description of Variety," are collected primarily at Johnston, Iowa. The data in Exhibit B are from comparisons of inbreds grown in the same tests in the adapted growing area of PH1W2 and in Johnston, IA. The data in Table 1 are from paired comparisons collected in Johnston, IA. The data in Table 2 are from paired comparisons grown primarily in the adapted growing area of PH1W2. These traits collectively show distinct differences between the two varieties.

3/25
4/2/01

The data collected in exhibit C was collected in 1996 and 1997 for page 1 and 2. There are environmental factors that differ from year to year. The environments had different planting dates. Environmental temperature and precipitation differences during the vegetative and grain fill periods can impact plant and grain traits and be a source of variability. Usually the variation from year to year is higher than within the same year. Please see table 3, which summarizes rainfall and growing season temperatures from 1994-1997. The environmental conditions described above could result in larger standard deviations. These data are based on 5 plants measured at each location.

Table 3. Average temperatures (Fahrenheit) and rainfall (inches) for central Iowa.

TEMPERATURE

YEAR	MAY	JUN	JULY	AUG	AVERAGE
1984	59.8	70.7	71.9	69.0	67.9
1985	58.2	69.4	74.3	76.9	69.2
1986	58.2	69.3	71.3	70.5	68.8
1987	53.5	70.6	74.1	69.8	67.0
AVG	56.4	70.0	72.9	71.5	67.7

RAINFALL

YEAR	MAY	JUN	JULY	AUG	Total
1984	3.67	5.75	1.71	4.18	15.31
1985	5.04	4.19	2.94	2.87	15.04
1986	8.47	4.35	2.51	2.14	17.47
1987	4.32	3.27	4.10	1.38	13.05
AVG	5.38	4.39	2.82	2.64	15.22

Exhibit D. Additional Paired Comparison Data

Variety #1= PH1W2 Variety #2= PH140		BU		GOU		MST		SDG		TIL		GDU		GDU		POL		POL		TAS		RT		STK		BRT		SOT	
YEAR	VAR	ACR	%MN	HA	ABS	ABS	ABS	VGR	ABS	LER	ABS	SHD	ABS	SHD	ABS	WT	ABS	WT	ABS	SZ	ABS	LDG	ABS	LDG	ABS	STK	ABS	GRN	ABS
85	1	124		52.8	21.8			8		0		1323		1300						5	5.8	99.1		98.5		95.7		8	
	2	102		44	18.5			5.8		4.1		1187		1199						4.5	4.8	92.6		99.5		99.1		7	
	12	12		12	15			6		6		10		8						2	4	4		7		4		1	
	15	15		15	18			6		6		10		8						2	4	4		7		4		1	
	PROB	.001#		.000#	.012#			0.833		0.319		.000#		.003#						0.5	.092*	0.329		0.149		.089*		1	
86	1	119		45.9	29.6			5.3		2.3		1352		1354						5	4.8	90		98.5				6	
	2	88		34.7	21.5			5.5		3.2		1208		1231						4.7	4.5	100		98.1				7.5	
	16	16		16	16			14		19		30		29						3	17	2		5				2	
	16	16		16	16			14		19		30		29						3	17	2		5				2	
	PROB	.000#		.000#	.000#			0.531		0.398		.000#		.000#						0.742	0.286	0.123		0.38				2	
87	1	113		41.8	13.5			6		0.6		1320		1324						5	4.5	100		100		90.9		7.7	
	2	70		26	12.9			5.7		2.2		1204		1212						4	4.5	100		100		100		7.7	
	4	4		4	4			13		6		27		27						1	15	5		1		1		3	
	4	4		4	4			13		6		27		27						1	15	5		1		1		3	
	PROB	.001#		.014*	0.482			0.284		0.189		.000#		.000#							0.838	1						1	
TOTAL SUM	1	120		48	24.4			5.7		1.5		1335		1335						5	4.8	97.9		87.8		94.8		7.2	
	2	91		37.1	19.3			5.6		3.1		1205		1219						4.5	4.5	87.3		89		89.3		7.5	
	LOCs	32		32	35			33		34		67		64						6	36	11		13		5		6	
	REPS	35		35	38			33		34		67		64						6	36	11		13		5		6	
	DIFF	29		10.9	5.2			0.1		1.6		130		116						0.5	0.3	0.6		1.2		4.5		0.3	
	PROB	.000#		.000#	.000#			0.804		.076*		.000#		.000#						0.296	0.141	0.83		0.103		.044*		0.611	

90000002

Exhibit D. Additional Paired Comparison Data

Variety #1= PH1W2 Variety #2= PHJ40																									
		PLT		EAR		BAR		DRP		GRN		TEX		EAR		KER		TAS		ECB		COM			
		HT		HT		PLT		EAR		APP		EAR		MLD		LB		WT		1LF		RST			
		ABS		ABS		ABS		ABS		ABS		ABS		ABS		ABS		ABS		ABS		ABS			
YEAR		#		(cm)																					
95		1	191.0	73.4	99	98.6	99	98.6	6	6	6	6	6	4.5	136.5	3051				3.5	5				
		2	159.5	72.1	98.1	98.9	98.1	98.9	6	6	6	6	6	8.5	171.2	3771.5				4	4				
LOCS		10	10	10	10	10	10	10	6	4	4	1	1	2	7	7				2	1				
REPS		10	10	10	10	10	10	10	6	5	1	1	1	2	7	7				2	1				
PROB		.000#	0.763	0.387	0.874	0.874	0.387	0.874	0.186					0.5	.000#	.000#				0.795					
96		1	201.9	79.0	98.7	100	98.7	100	6.4	6.4	6	6	6	9	134.8	2969.2				5			6.7		
		2	181.1	74.4	97.8	100	97.8	100	7.5	7.5	6.5	6.5	6.5	9	167.6	3692.7				3	4		6.7		
LOCS		11	7	10	4	4	10	4	8	2	1	1	1	4	4	4				1			3		
REPS		11	7	10	4	4	10	4	8	2	1	1	1	4	4	4				1			3		
PROB		.000#	0.459	0.482	1	1	0.482	1	.023+	0.5				.004#	.004#	.004#				0.628			1		
97		1	211.1	84.1	98.6		98.6					5.5	8.7												
		2	180.3	78.2	99.3		99.3					5.5	7.7												
LOCS		14	13	5			5					2	3												
REPS		14	13	5			5					2	3												
PROB		.000#	.028+	0.374			0.374					1	0.225							.092*					
TOTAL SUM		1	202.4	79.2	98.8	99.2	98.8	99.2	6.3	6.3	5.8	7.3	7.3	7.3	137.2	3021.2				3.3	4	5	6.7		
		2	174.6	75.4	98.2	99.3	98.2	99.3	7.3	7.3	6	8.2	8.2	8.2	169.9	3742.9				3.1	4	4	6.7		
LOCS		35	30	25	10	10	25	10	12	5	5	6	6	6	11	11				10	3	1	3		
REPS		35	30	25	10	10	25	10	13	5	5	6	6	6	11	11				10	3	1	3		
DIFF		27.8	4.1	0.6	0.2	0.2	0.6	0.2	1	0.2	0.8	0.8	0.8	0.8	32.8	721.7				0.2	0	1	0		
PROB		.000#	.071*	0.369	0.658	0.658	0.369	0.658	.005#	0.374	0.595	0.595	0.595	0.595	.000#	.000#				.074*	1	1	0		

900002

DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

- ANT ROT** = **ANTHRACNOSE STALK ROT** (*Colletotrichum graminicola*).
A 1 to 9 visual rating indicating the resistance to Anthracnose Stalk Rot. A higher score indicates a higher resistance.
- BAR PLT** = **BARREN PLANTS**.
The percent of plants per plot that were not barren (lack ears).
- BRT STK** = **BRITTLE STALKS**.
This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.
- BU ACR** = **YIELD (BUSHEL/ACRE)**.
Yield of the grain at harvest in bushels per acre adjusted to 15.5% moisture.
- CLD TST** = **COLD TEST**.
The percent of plants that germinate under cold test conditions.
- CLN** = **CORN LETHAL NECROSIS**.
Synergistic interaction of maize chlorotic mottle virus (MCMV) in combination with either maize dwarf mosaic virus (MDMV-A or MDMV-B) or wheat streak mosaic virus (WSMV). A 1 to 9 visual rating indicating the resistance to Corn Lethal Necrosis. A higher score indicates a higher resistance.
- COM RST** = **COMMON RUST** (*Puccinia sorghi*).
A 1 to 9 visual rating indicating the resistance to Common Rust. A higher score indicates a higher resistance.
- DIP ERS** = **DIPLODIA EAR MOLD SCORES** (*Diplodia maydis* and *Diplodia macrospora*).
A 1 to 9 visual rating indicating the resistance to Diplodia Ear Mold. A higher score indicates a higher resistance.
- DRP EAR** = **DROPPED EARS**.
A measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.
- EAR HT** = **EAR HEIGHT**.
The ear height is a measure from the ground to the highest placed developed ear node attachment and is measured in cm.
- EAR MLD** = **GENERAL EAR MOLD**.
Visual rating (1-9 score) where a "1" is very susceptible and a "9" is very resistant. This is based on overall rating for ear mold of mature ears without determining the specific mold organism, and may not be predictive for a specific ear mold.
- EAR SZ** = **EAR SIZE**.
A 1 to 9 visual rating of ear size. The higher the rating the larger the ear size.
- ECB 1LF** = **EUROPEAN CORN BORER FIRST GENERATION LEAF FEEDING** (*Ostrinia nubilalis*).
A 1 to 9 visual rating indicating the resistance to preflowering leaf feeding by first generation European Corn Borer. A higher score indicates a higher resistance.

- ECB 2IT = EUROPEAN CORN BORER SECOND GENERATION INCHES OF TUNNELING (*Ostrinia nubilalis*).
Average inches of tunneling per plant in the stalk.
- ECB 2SC = EUROPEAN CORN BORER SECOND GENERATION (*Ostrinia nubilalis*).
A 1 to 9 visual rating indicating post flowering degree of stalk breakage and other evidence of feeding by European Corn Borer, Second Generation. A higher score indicates a higher resistance.
- ECB DPE = EUROPEAN CORN BORER DROPPED EARS (*Ostrinia nubilalis*).
Dropped ears due to European Corn Borer. Percentage of plants that did not drop ears under second generation corn borer infestation.
- EST CNT = EARLY STAND COUNT.
This is a measure of the stand establishment in the spring and represents the number of plants that emerge on per plot basis for the inbred or hybrid.
- EYE SPT = EYE SPOT (*Kabatiella zeae* or *Aureobasidium zeae*).
A 1 to 9 visual rating indicating the resistance to Eye Spot. A higher score indicates a higher resistance.
- FUS ERS = FUSARIUM EAR ROT SCORE. (*Fusarium moniliforme* or *Fusarium subglutinans*).
A 1 to 9 visual rating indicating the resistance to Fusarium ear rot. A higher score indicates a higher resistance.
- GDU = GROWING DEGREE UNITS.
Using the Barger Heat Unit Theory, which assumes that maize growth occurs in the temperature range 50°F - 86°F and that temperatures outside this range slow down growth; the maximum daily heat unit accumulation is 36 and the minimum daily heat unit accumulation is 0. The seasonal accumulation of GDU is a major factor in determining maturity zones.
- GDU SHD = GDU TO SHED.
The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:
$$GDU = (Max. Temp. + Min. temp.) - 50/2$$

The highest maximum temperature used is 86° F. and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.
- GDU SLK = GDU TO SILK.
The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in GDU SHD definition.
- GIBERS = GIBBERELLA EAR ROT (PINK MOLD) (*Gibberella zeae*).
A 1 to 9 visual rating indicating the resistance to Gibberella Ear Rot. A higher score indicates a higher resistance.
- GLF SPT = GRAY LEAF SPOT (*Cercospora zeae-maydis*).
A 1 to 9 visual rating indicating the resistance to Gray Leaf Spot. A higher score indicates a higher resistance.
- GOS WLT = GOSS' WILT (*Corynebacterium nebraskense*).
A 1 to 9 visual rating indicating the resistance to Goss' Wilt. A higher score indicates a higher resistance.

- GQU/HA = **YIELD**
Grain quintals per hectare
- GRN APP = **GRAIN APPEARANCE.**
This is a 1 to 9 rating for the general appearance of the shelled grain as it is harvested based on such factors as the color of harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality.
- HC BLT = **HELMINTHOSPORIUM CARBONUM LEAF BLIGHT (*Helminthosporium carbonum*).**
A 1 to 9 visual rating indicating the resistance to Helminthosporium infection. A higher score indicates a higher resistance.
- HD SMT = **HEAD SMUT (*Sphacelotheca reiliana*).**
This score indicates the percentage of plants not infected.
- KER KG = **KERNELS PER KILOGRAM.**
The number of kernels per 1 kilogram of seed after discard is removed.
- KSZ DCD = **KERNEL SIZE DISCARD.**
The percent of discard seed; calculated as the sum of discarded tip kernels and extra large kernels.
- MDM CPX = **MAIZE DWARF MOSAIC COMPLEX (MDMV = Maize Dwarf Mosaic Virus and MCDV = Maize Chlorotic Dwarf Virus).**
A 1 to 9 visual rating indicating the resistance to Maize Dwarf Mosaic Complex. A higher score indicates a higher resistance.
- MST = **HARVEST MOISTURE.**
The moisture is the actual percentage moisture of the grain at harvest.
- NLF BLT = **NORTHERN LEAF BLIGHT (*Helminthosporium turcicum* or *Exserohilum turcicum*).**
A 1 to 9 visual rating indicating the resistance to Northern Leaf Blight. A higher score indicates a higher resistance.
- PLT HT = **PLANT HEIGHT.**
This is a measure of the height of the plant from the ground to the tip of the tassel in cm.
- POL SC = **POLLEN SCORE.**
A 1 to 9 visual rating indicating the amount of pollen shed. The higher the score the more pollen shed.
- POL WT = **POLLEN WEIGHT.**
This is calculated by dry weight of tassels collected as shedding commences minus dry weight from similar tassels harvested after shedding is complete.
- PRM = **PREDICTED RELATIVE MATURITY.**
This trait, predicted relative maturity, is based on the harvest moisture of the grain. The relative maturity rating is based on a known set of checks and utilizes standard linear regression analyses and is also referred to as the Comparative Relative Maturity Rating System that is similar to the Minnesota Relative Maturity Rating System.
- PRM SHD = **PREDICTED RELATIVE MATURITY GDU TO SHED.**
A relative measure of the growing degree units (GDU) required to reach 50% pollen shed. Relative values are predicted values from the linear regression of observed GDU's on relative maturity of commercial checks.
- RT LDG = **ROOT LODGING.**
Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

- SCT GRN = SCATTER GRAIN.
A 1 to 9 visual rating indicating the amount of scatter grain (lack of pollination or kernel abortion) on the ear. The higher the score the less scatter grain.
- SDG VGR = SEEDLING VIGOR.
This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor.
- SEL IND = SELECTION INDEX.
The selection index gives a single measure of the hybrid's worth based on information for up to five traits. A maize breeder may utilize his or her own set of traits for the selection index. One of the traits that is almost always included is yield. When selection index data is presented, the tables represent the mean value averaged across testing stations.
- SLF BLT = SOUTHERN LEAF BLIGHT (*Helminthosporium maydis* or *Bipolaris maydis*).
A 1 to 9 visual rating indicating the resistance to Southern Leaf Blight. A higher score indicates a higher resistance.
- SOU RST = SOUTHERN RUST (*Puccinia polysora*).
A 1 to 9 visual rating indicating the resistance to Southern Rust. A higher score indicates a higher resistance.
- STAGRN = STAYGREEN.
Staygreen is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.
- STK CNT = NUMBER OF PLANTS.
This is the final stand or number of plants per plot.
- STK LDG. = STALK LODGING.
This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.
- STW WLT = STEWART'S WILT (*Erwinia stewartii*).
A 1 to 9 visual rating indicating the resistance to Stewart's Wilt. A higher score indicates a higher resistance.
- TAS SZ = TASSEL SIZE.
A 1 to 9 visual rating was used to indicate the relative size of the tassel. The higher the rating the larger the tassel.
- TAS WT = TASSEL WEIGHT.
This is the average weight of a tassel (grams) just prior to pollen shed.
- TEX EAR = EAR TEXTURE.
A 1 to 9 visual rating was used to indicate the relative hardness (smoothness of crown) of mature grain. A 1 would be very soft (extreme dent) while a 9 would be very hard (flinty or very smooth crown).
- TILLER = TILLERS.
A count of the number of tillers per plot that could possibly shed pollen was taken. Data are given as a percentage of tillers: number of tillers per plot divided by number of plants per plot.
- TST WT = TEST WEIGHT (UNADJUSTED).
The measure of the weight of the grain in pounds for a given volume (bushel).
- YLD SC = YIELD SCORE.
A 1 to 9 visual rating was used to give a relative rating for yield based on plot ear piles. The higher the rating the greater visual yield appearance.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) PIONEER HI-BRED INTERNATIONAL, INC.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME PH1W2
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 7301 NW 62nd AVENUE P.O. BOX 85 JOHNSTON, IA 50131-0085	5. TELEPHONE (include area code) 515-270-4051	6. FAX (include area code) 515-253-2125
	7. PVPO NUMBER	900002

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO

If no, give name of country

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is(are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

Variety PH1W2 is owned by Pioneer Hi-Bred International Inc.

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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